The sweet and sour of bariatric surgery — Identifying the incidence of post-operative diabetic ketoacidosis

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Background

Bariatric surgery has become an increasingly common treatment in managing severe obesity in the Australian population. Patients undergoing bariatric surgery are required to follow a Very Low Energy Diet (VLED), commencing 4 weeks before surgery. Published case reports have highlighted the risk of diabetic ketoacidosis (DKA) after bariatric surgery, with possible precipitants including reduced oral intake, omission of insulin, and combination of VLED and sodium glucose co-transporter (SGLT-2) inhibitor use. The Australia Diabetes Society (ADS) advises to presume diabetic ketoacidosis if ketones are > 1.0mmol/L and base excess is less than –5mmol/L. It defines euglycaemic DKA as presence of the above with blood glucose levels < 14mmol/L.

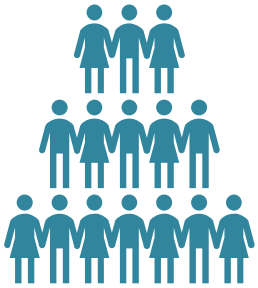
Aim

To determine the incidence of ketosis with or without clinically diagnosed diabetic ketoacidosis in patients who have undergone bariatric surgery at the Royal Brisbane and Women's Hospital (RBWH).

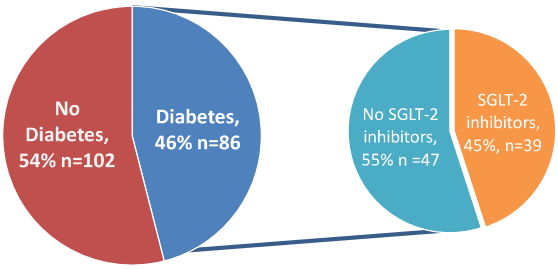
Methods

Ethics exemption was obtained from the RBWH Ethics Committee. Medical records of 188 patients who had bariatric surgery at the RBWH between 1 January 2020 and 30 April 2021 were retrospectively reviewed. Data captured included patient demographics; type of surgery; diabetes status; SGLT-2 inhibitor use and the time interval it was withheld before surgery; perioperative blood glucose and ketone levels and clinical diagnosis of DKA within 30 days of surgery.

Results



Total **188** patients audited



Only **9** patients (4.8%) had blood ketones checked in the perioperative period

7 patients had had elevated ketones **> 1.0mmo/L (range = 1.9-6.6)**

Of whom **6** patients were taking SGLT-2 inhibitors

All SGLT-2 inhibitors had been ceased at least 2 days prior to surgery (≥ 72 hours before surgery) as per ADS recommendations.

2 patients developed **euglycaemic DKA** in the perioperative period, both had been on **SGLT-2 inhibitors.**

Conclusion

There is a small but significant risk of DKA in patients who are undergoing bariatric surgery, particularly euglycaemic diabetic ketoacidosis in patients who have been treated with a SGLT-2 inhibitor. Pharmacists have an important role in alerting patients and clinicians to the signs and symptoms of euglycaemic diabetic ketoacidosis and highlighting its risks in the perioperative period. Currently the National Insulin Subcutaneous Order and Blood Glucose Record Form only prompts ketone monitoring when blood glucose levels > 16mmol/L. However increased monitoring of blood ketones in the bariatric surgery patient cohort is warranted, particularly in those patients who have been treated with a SGLT2 inhibitor as euglycaemic DKA can still occur even when these agents have been ceased appropriately prior to surgery.

Contact Us

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